

Claims

I CLAIM:

1. A method for improving a quality of a signal in a fluid-based separation
5 scheme by employing a plurality of sensors, said sensors being stationary relative to a capillary tube, and a three-way valve, the method comprising:

- (a) stopping a fluid solution in the capillary tube adjacent to the plurality
of stationary sensors by diverting the fluid solution to a waste port of
the three-way valve;
- 10 (b) sensing information about the solution with at least some of the plurality of stationary sensors;
- (c) operating on signals from each of the at least some of the plurality of stationary sensors using an operation selected from a group consisting of integration, summation, and statistical correlation to create a signal
15 with greater signal to noise ratio than any of the individual plurality of signals; and
- (d) using said signal with greater signal to noise ratio to produce a chromatogram.

20 2. The method of claim 1 wherein the step of stopping the fluid solution comprises the steps of:

- (a) detecting a leading edge indicator in the solution when it is in a neighborhood of a predetermined photocell sensor;
- (b) diverting the fluid solution to the waste port of the three-way valve
25 when the leading edge indicator is detected in the neighborhood of a predetermined photocell sensor.

3. The method of claim 2 wherein the leading edge indicator is a solvent spike.

30 4. The method of claim 2 wherein the leading edge indicator is a plug of fluid

having significantly different optic characteristics when compared to a remainder of the fluid solution.

5 5. The method of claim 1 wherein a predetermined number of sensors are used as the at least some of the plurality of sensors.

 6. The method of claim 1 wherein the operated on signals are assembled into a chromatogram.

10 7. The method of claim 1 wherein the plurality of sensors are photocell sensors.

 8. The method of claim 1 wherein a pressure of the fluid solution is relieved when the fluid solution is diverted to the waste port of the three-way valve, and a
15 flow of said fluid solution stops when the pressure is fully relieved.

 9. An apparatus for improving a quality of a signal in a capillary separation scheme by employing a capillary tube in which fluid flows adjacent to a plurality of sensors, said sensors being stationary relative to the capillary tube, the apparatus
20 comprising:

- (a) a three-way valve comprising a port operably connected to the capillary tube and a waste port, said three-way valve for diverting a flow of a solution to a waste port of said three-way valve;
- (b) sensors for sensing optic information about the solution with at least
25 some of the plurality of stationary sensors; and
- (c) at least one calculation unit operating on signals from each of the at least some of the plurality of stationary sensors using an operation selected from a group consisting of integration, summation, and statistical correlation to create a signal with greater signal to noise
30 ratio than any of the individual plurality of signals.

10. The apparatus of claim 9 additionally comprising an apparatus for determining an appropriate stopping point for the flow of the solution comprising:

- (a) a leading edge indicator in the solution; and
- (b) at least one sensor for detecting the leading edge indicator at a predetermined point.

11. The apparatus of claim 10 wherein the leading edge indicator comprises a solvent spike.

12. The apparatus of claim 10 wherein the leading edge indicator comprises a plug of fluid having significantly different optic characteristics than a remainder of the solution.

13. The apparatus of claim 9 including means to assemble the operated on signals into a chromatogram.

14. The apparatus of claim 9 wherein the plurality of sensors comprise photocell sensors.